Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A method for the purification of plasmid DNA in an aqueous two-phase system, comprising:

(a) providing a composition including a first polymer that exhibits inverse solubility characteristics, a second polymer that is immiscible in the first polymer and, optionally, a salt;

(b) contacting said composition with an aqueous solution comprising plasmid DNA and RNA;

(c) providing a phase separation wherein plasmid DNA is partitioned to a top aqueous phase while RNA partitions predominantly to a lower phase, and subsequently isolating the top aqueous phase;

(d) increasing the temperature of the isolated top aqueous phase to a temperature above the cloud point of the first polymer and below a temperature where plasmid DNA is degraded and subsequently isolating ~~the~~ a top aqueous phase so formed; and, optionally,

(e) performing a chromatography step to recover the plasmid DNA from the isolated top phase of step (d).

Claim 2 (previously presented): The method of claim 1, wherein the first polymer has a cloud point below about 60^0C in the aqueous solution.

Claim 3 (previously presented): The method of claim 1, wherein the first polymer is selected from the group consisting of polyalkylene glycols, poly(oxyalkylene)polymers, poly(oxyalkylene)copolymers, polyvinyl pyrrolidone, polyvinyl alcohol, polyvinyl caprolactam, polyvinyl methylether, alkoxylated surfactants, alkoxylated starches, alkoxylated cellulose, alkyl hydroxyalkyl cellulose, silicone-modified polyethers, poly N-isopropylacrylamide and copolymers thereof.

Claim 4 (previously presented): The method of claim 1, wherein the first polymer is a copolymer including ethylene oxide and propylene oxide.

Claim 5 (previously presented): The method of claim 1, wherein the second polymer is selected from the group consisting of hydroxyalkyl cellulose, hydroxyalkyl starches, starch, dextran, and pullulan.

Claim 6 (previously presented): The method of claim 1, wherein the weight ratio of the amounts of first polymer:second polymer is about 1:1.

Claim 7 (previously presented): The method of claim 6, wherein the amount of the first polymer is about 4.5% (w/w) and the amount of the second polymer is about 4.5% (w/w) of the composition provided in step (a).

Claim 8 (previously presented): The method of claim 1, wherein the aqueous solution that includes plasmid DNA is a cell lysate, and wherein said method further comprises a step for desalting the cell lysate before step (b).

Claim 9 (previously presented): The method of claim 1, wherein the contacting according to step (b) involves mixing at room temperature.

Claim 10 (previously presented): The method of claim 1, wherein the isolation according to step (c) and/or step (d) is by centrifugation.

Claims 11-21 (cancelled)

Claim 22 (previously presented): The method of claim 4, wherein the copolymer includes about 50% propylene oxide and about 50% ethylene oxide.